

*Local Storms.*—Matronsville, Tuscola, Co., Mich., 3rd, p. m., a "cyclone" accompanied by heavy rains passed over the county fair grounds doing great damage; cloth tents were torn to shreds; fences blown down, and much other destruction committed. "Waynesborough, Ga., 10th, very destructive storm demolishing a church and uprooting many trees."

*Sand-storms.*—Fort Yuma, Cal., 7th, 13th, 14th, 25th, 27th; Visalia, Cal., 7th; Los Angeles, Cal., 8th; Burkes Ariz., 18th, 26th and 27th.

## VERIFICATIONS.

*Indications.*—The detailed comparison of the tri-daily weather indications for October with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of omissions to be 0.87 per cent, and of verifications to be 86.3 per cent. The percentages for the four elements have been, Weather, 91.4; Direction of the Wind, 87.0; Temperature, 86.9; Barometer, 82.5. The percentages of verifications by geographical districts, have been: New England, 85.8; Middle States, 89.5; South Atlantic States, 87.3; Eastern Gulf States, 87.9; Western Gulf States, 85.2; Lower Lake region, 88.2; Upper Lake region, 89.5; Tennessee and the Ohio valley, 88.2; Upper Mississippi valley, 84.0; Lower Missouri valley, 85.0; Northern Pacific coast region, 65.7; Central Pacific coast region, 95.2; Southern Pacific coast region, 100.0. Of the 3,750 predictions that have been made, 137, or 3.62 per cent, are considered to have entirely failed; 87, or 2.30 per cent, were one-fourth verified; 408, or 10.79 per cent, were one-half verified; 330, or 8.73 per cent, were three-fourths verified; 2,818, or 74.55 per cent, were fully verified, so far as can be judged from the tri-daily weather maps.

*Cautionary Signals.*—166 Cautionary Signals were displayed during the month, of which 114, or 68.7 per cent., were justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of, the station. 51 Cautionary Off-shore Signals were displayed, which were all justified as to direction, and of which 44, or 86.3 per cent., were fully justified. Of the Cautionary Off-Shore Signals, 15 were changed from Cautionary. 217 Signals of both kinds were displayed, of which 158, or 72.8 per cent., were fully justified. The above does not include signals ordered at 52 display stations where the velocity is only estimated. 52 cases were reported of winds of 25 miles or over where signals were not ordered.

## NAVIGATION.]

In the table in the right hand side of Chart No. III are given the highest and lowest readings of the Signal Service river-gauges for the month, with the dates of the same. The rivers have continued very low throughout the entire month. The low stage of water in the Red and Ohio rivers deserve special notice. The Red River at Shreveport continued below the previous low water mark, and on the 31st had fallen to 41 inches below it, navigation continuing entirely suspended. The Arkansas at Little Rock fell on the 11th to a lower level than ever before known, and the observer reports great scarcity of water throughout that section. The Ohio at Pittsburgh was 13 inches below previous low-water mark on the 19th and 20th; at Wellsboro', W. Va., near the end of the month, the river was two inches lower than known before, and at Louisville, on the end of the month, it was reported lower than before known, "there being scarcely two feet depth of water in many places, while what is known as the falls presented a bleak and barren appearance, huge rocks and stone-bed being visible for miles." At Trenton, N. J., on the 18th the Delaware river was lower than it had been for many years. The lakes are also very low, the water in Grand Traverse Bay, Lake Michigan, on the 31st being lower than for many years past, and in Sandusky Bay, Lake Erie, on the same date, lower than for twenty years past. Lake Champlain was reported on the 31st to be lower than for the last fifty years, and falling. The only high waters during the month worthy of notice occurred on the 19th and 20th in the rivers rising in the Cumberland and Blue Ridge Mountain region. The Savannah at Augusta rose to 23 feet, and the Tennessee, at Chattanooga, to 13 feet on the above dates.

*High Tides.*—St. Marks, Fla., 7th, five feet above the mean; Cape Lookout, N. C., 13th, 14th, 16th, 17th and 18th; Cape Hatteras, N. C., 13th and 14; Ft. Macon, N. C., 16th to 18th unusually high tides; Barnegat, N. J., 15th, unusually high; Jacksonville, Tenn., 16th, highest tide ever known on the bar at the mouth of St. Johns river; Punta Rassa, 15th; Indianola, Tex., 2nd, 3rd, 8th, 9th, 10th, 11th, 12th, 16th, 17th, 18th, 20th, 24th, 26th and 28th; Portsmouth, N. C., 12th, 14th and 16th; Cape Lookout, N. C., 13th, 15th, 16th, 17th and 18th; Eastport, Me., 16th, 17th, 20th and 21st.

## TEMPERATURE OF WATER.

*The Temperatures of water,* as observed in rivers and harbors, with average depth at which the observations were taken, are given on Chart No. II. At the following stations no observations were made on the dates indicated:—At Augusta, from the 24th to the 31st, and at Norfolk from the 13th to the 24th, by reason of breakage of thermometer; and at Cleveland on the 19th, 23rd, 24th, and from the 28th to 31st, the lake being too rough for observations to be made. Reports are not yet to hand from Escanaba, and the Station at St. Marks, Fla., has been discontinued.

## ATMOSPHERIC ELECTRICITY.

*Thunder-storms.*—These storms have been reported in considerable numbers during the month. They were most numerous and widespread, as follows: On the 28th they generally occurred in New England and the Middle Atlantic States. On the 10th and 11th they prevailed in the South Atlan-